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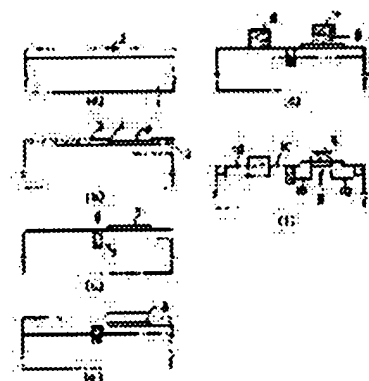
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(54) SEMICONDUCTOR DEVICE AND MANUFACTURE THEREOF

(57)Abstract:

PURPOSE: To make it possible to form MESFETs whose threshold voltages are different from each other, on the same substrate by a method wherein step differences are provided on the surface of a semiconductor film by further laminating it with a part of a layer to become a channel active layer by a crystal growth technique which performs control at the level of an atomic layer on an epitaxial active layer which is controlled and deposited at the level of an atomic layer.

CONSTITUTION: An N-type GaAs epitaxial layer 2 is formed on a semi-insulative GaAs substrate 1 by a technique of superposing atomic planes one sheet by one sheet and a prescribed part only of an epitaxial layer 5 of the level of an atomic layer is further deposited on the layer 2 using this crystal growth technique. Then, a high-melting point metal film or a high-melting point metal compound film 8 is formed as a gate electrode, an insulating film 9 is deposited thereon to perform a gate electrode processing and the electrode 8 is self-aligned to form source/drain N⁺ layers 10 by implanting Si ions. Thereby, MESFETs (Metal Semiconductor Field Effect Transistors), whose threshold voltages are different from each other, can be manufactured on the same substrate.



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